**III. Project Services**

1. ***The extent to which the services provided by the proposed project are appropriate to the needs of the intended recipients or beneficiaries of those services.***

The GREAT MINDS Project is designed around three primary goals which establish a breadth of services to meet the needs of all participants: P-12 students, in-service teachers, and pre-service teachers; global higher education, business, and government partners; and nationally renowned P-12 educators, as well as UWA faculty. These services will specifically be accessible to all West Alabama area P-12 students, in-service teachers, and pre-service teachers. Efforts to make the GREAT MINDS Project available to the West Alabama target population include: providing transportation for P-12 students to the summer camps; offering the summer camps at no charge to the P-12 students who attend; furnishing stipends for teachers to attend the professional development week of camp and the week of teaching students at summer camp; providing funds for substitute teachers so in-service teachers can attend professional development during the school year; giving vouchers for science or math hands-on kits for teachers to take back to their classroom; and providing funds for national journals, registration and travel to STEM conferences, and STEM field trips for pre-service teachers.

***Project Services Description***

The first goal is the establishment of the GREAT MINDS International Consortium proposes to invite partner institutions of higher education and P-12 education from China, South Korea, the United Kingdom, and Finland to participate in synchronous and asynchronous classroom discussions, to contribute to teaching and learning videos, and to share best practice lessons in STEM with faculty members, pre-service teachers, graduate students, and in-service teachers at UWA. This international collaboration is established through a UWA telepresence classroom outfitted with Cisco communication hardware and software to allow for real-time communication with higher education and P-12 classrooms internationally. COE proposes to accommodate 6 classrooms with flat-screen monitors, cameras, and microphones to create opportunities for audio & video communications with the international partner’s. A video and podcast repository of best practice lessons in STEM will be created using iTunes U. This conduit allows the GREAT MINDS program participants and International Consortium partners to produce and share multimedia files in a user-friendly and universal format. The International Consortium will host an International Summit on STEM Teaching and Learning held annually during the summer at UWA. This conference proposes face-to-face and virtual components including STEM keynote educators from across the US and the International Consortium partners, concurrent sessions presented by UWA professors, student, and international institutions partner with real-time virtual webinar or power point sessions that showcase best practices in STEM lessons.

The second goal of the GREAT MINDS project is to develop and implement STEM curriculum in the training of both pre-service and in-service teachers and to address specifically critical thinking and problem solving skills. The GREAT MINDS project will recruit 40 in-service teachers UWA service region and create a professional learning community (PLC) for the development and implementation of STEM lessons into regional P-12 classrooms. The GREAT MINDS PLC brings together a cohort of teachers dedicated to improving STEM instruction. Teachers interested in the GREAT MINDS project must submit a completed application to the application committee which consists of the GREAT MINDS key personnel. The application requires teachers to submit a current resume, an essay explaining the importance of STEM education, and a personal interview with the committee. The proposed requirements to participate include (1) a master’s degree in Teacher Education, (2) teach STEM subjects grades P-12, and (3) teach in a P-12 school in west Alabama service region. Applications to participate in the GREAT MINDS project are accepted each year in September and the annual cohort is notified by October 15 of that year.

During the school year, teachers selected for the GREAT MINDS PLC are invited to the UWA campus twice a semester to participate in high-quality, research-based professional development activities in the areas of STEM, technology integration, and 21st Century Pedagogy. The GREAT MINDS PLC will reimburse LEAs to hire substitutes for these professional development days. The GREAT MINDS PLC includes hands-on instruction using science kits and math manipulative for P-12 students, technology instruction in creating online student projects in STEM subjects, and pedagogical instruction in developing critical thinking skills.

Upon completion of the PLC, the participants will attend a 5-day summer professional development GREAT MINDS Teacher camp. The teachers will team with UWA faculty from the COE and the College of Natural Sciences and Mathematics to develop lesson plans utilizing hands-on, inquiry-based activities to develop critical thinking skills through topics such as forensics, the environment, flight, and robotics. The camp serves as preparation for these STEM educators to use their knowledge with real students the following week during the GREAT MINDS Summer Day Camp for local P-12 students. After the successful completion of the GREAT MINDS Summer Day Camp for students, teachers who have participated in all aspects of the project will receive a $1,000 stipend for the two week summer professional development, a science or mathematics teaching kit and an Apple iPad to enhance STEM instruction in the classroom. These same teachers are expected to continue to use the STEM content and methods learned in their P-12 classrooms and are encouraged to open their classrooms to UWA faculty and students for classroom observations.

The GREAT MINDS Summer Day Camp is a 5-day experience open to 40 students in grades K-2, 40 students in grades 3-5, 40 students in grades 6-8, and 40 students in grades 9-12 for the four summers of the project. Students submit an application to participate in the GREAT MINDS Summer Day Camp. Students must attend a P-12 school in the West Alabama area and be recommended by a local school teacher and an administrator or two teachers. Students are accepted to the GREAT MINDS Summer Day Camp on a first-come, first-served basis so only 40 students per age range per summer are allowed to participate in the camp. Students may attend the GREAT MINDS Summer Day Camp for more than one summer if they meet the application requirements.

GREAT MINDS Summer Day Camp planned sessions are from 8:30 to 12:30 Monday through Friday of the designated camp week for specific age groups (Primary K-2, Intermediate 3-5, Middle School 6-8, and High School 9-12). The students are divided into teams of 5-6 students and work in a learning community with an in-service teacher, UWA undergraduate and graduate students for intensive hands-on learning experiences. This experience creates an ideal student to teacher ratio providing students opportunities to ask questions, investigate problems and solutions, and work collaboratively to solve STEM problems.

Students at the GREAT MINDS Day Camp will investigate one major topic each summer including forensics, the environment, flight, and robotics. The curriculum of all of the camps will be age-appropriate and include science lab instruction as well as technology integration and mathematical problem solving. By reaching 160 students in the West Alabama service area each summer through the five-day camp experience, the UWA GREAT MINDS project will increase student interest and aptitude in the STEM areas. GREAT MINDS Summer Day Camp is supported by the science and math kits, probe ware, printers, microscopes (digital and light), digital large format printers, science lab supplies such as beakers, slides, etc., and laptops listed in the budget.

The third goal of the GREAT MINDS project is met by the Transforming Hands-on Ideas into New Knowledge or THINK Teacher Recruiting Program. The recruiting facet seeks to establish an annual cohort of Black American students (10 per cohort) from partnership schools across Alabama to be participants in the THINK Teacher Recruiting Program. These students will be recruited through visits to local high schools and through hosted campus visits for prospective THINK students. In addition, the THINK Teacher Recruiting Program will increase enrollment by 10 per year for a total students of 40 students during the performance period with 75% continuing to the Teacher Education Program. As COE students, they will participate in service learning projects on the UWA campus and West Alabama region. THINK participants are assigned a faculty mentor in the COE who advise them in their coursework, offer psychological and personal support to them if they are first-generation college students, and offer advice about being successful in the college environment. The service learning and mentoring portions of the GREAT MINDS grant allows the UWA faculty team to work with pre-service Black American male and female teachers for the entire project period to insure their success as a STEM educator upon graduation.

***b. The extent to which the services to be provided by the proposed project reflect up-to-date knowledge from research and effective practice.***

Current research supports the three goals and their respective methods of attainment proposed by The GREAT MINDS. First, the establishment of the GREAT MINDS International Consortium with an international summit in STEM education advances UWA towards the goal of becoming a more globally aware of international issues in education. By affording the West Alabama teaching community (pre-service and in-service) the opportunity to interact with and learn from a diverse consortium of globally renowned educators, business leaders and other innovators, these educators are exposed to the great minds in the STEM community utilizing the most current technologies both in communication and in pedagogy.

According to Gilbert (2009), major researchers in the field agree that the inquiry-based, constructivist approach like that employed by the GREAT MINDS Teacher Camp and the GREAT MINDS Summer Day Camp is “the most effective approach in teaching science” (p. 432) and thus the most pedagogically sound means of delivering STEM instruction. Gilbert uses the National Research Council’s (2000) five components of inquiry-based learning which include that the learner “(1) engages in scientific questioning, (2) searches for evidence to support ideas, (3) hypothesizes possible explanations based on evidence, (4) connects those explanations to science understanding, and (5) shares findings and explanations with larger classroom community.” (p. 432)

Finally, addressing the vital need for recruitment and retention of high-needs students, particularly among the Black American population, GREAT MINDS directly addresses the President’s Council of Advisors on Science and Technology (2010) directive that the federal government and the education community should support at least 100,000 new STEM teachers over the next decade from programs that are designed to produce teachers who have strong majors in STEM fields and strong content-specific pedagogical preparation – including teachers from nontraditional backgrounds who help diversify the STEM teaching force.” (p. 65)

Gilbert, A. (2009). Utilizing science philosophy statements to facilitate k-3 teacher candidates’

development of inquiry-based science practice. *Early childhood education journal, 36,* 431-438.

National Research Council. (2000). *National Science Education Standards.* Washington, DC:

National Academy Press.

THIRD QUOTE IS FROM REFERENCES FROM SECTION YOU CUT FROM PART I.